The Plant Doctor's LANDSCAPE TIPS

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IMAZAPYR NIGHTMARE ON ELM STREET

"Forgive Them . . . For They Know Not What They Do"

INTRODUCTION

As if we didn't think the problems with Imazapyr could get any worse, they've gotten a lot worse! Following are some nightmarish stories of Imazapyr and plants. The names and places have often been changed to protect the innocent . . . and the guilty.

PHRAGMITES CONTROL BY HELICOPTER

In a bay somewhere along Michigan's extensive coast line, local government officials decided to use the dynamic duo, glyphosate and Imazapyr, for Phragmites control (Photo 1A). The company that won the bid decided to apply the dynamic duo by helicopter. I may not be an expert in the application of herbicides by aerial means, but drift should be a concern when applying any pesticide. My practical nature would register caution of drift from a helicopter's rotor wash. Indeed, many trees and landscapes were affected by this herbicide application (Photo 1B). However the primary objective seems to have worked – Phragmites is largely gone.

Photo 1A: Glyphosate and Imazapyr are used for invasive plant management in many areas, even along waterways where Phragmites is common.

Photo 1B: At this location along the shoreline of one of Michigan's Lakes, Imazapyr and glyphosate, the dynamic duo, were applied by helicopter. Many trees and shrubs were killed and many remain in hopeful recovery.

POLARIS, THE NUCLEAR OPTION FOR MANAGEMENT OF INVASIVES AT HISTORIC SITES

"Polaris" may be a name ascribed to the North Star, residing in a unique association with the Big Dipper in the sky for many of us peace lovers. But Polaris is also the name assigned to the nuclear tip of the U.S.'s intercontinental ballistic missile. In the world of herbicides, Polaris is also a trade name for Imazapyr, which in some cases may be more closely related to the nuclear option than the North Star. Apparently at an historic site (in the U.S.) managed by the National Park Service, Polaris was specified for management of invasive plants such as buckthorn, etc. Unfortunately, the Park Service and contract applicators didn't expect the collateral damage to historic trees (Photo 2), some of which are gradually recovering while some are not. The site shall remain anonymous . . . er, uh, hmmm . . . for obvious reasons of national security and great sensitivity.

Photo 2: At a national historic site, Polaris (Imazapyr) was specified by the National Park Service for suppression of invasive plants. Unfortunately, many historic trees were harmed after application by the arborist who won the bid. Needless to say, the Park Service is not happy . . .

OAK WILT OR NOT???

I was contacted by an arborist who believed he had encountered another Oak Wilt site in Shelby Twp. Problem was, it didn't feel quite right to him for Oak Wilt (Photo 3A). So, I volunteered to view the site. Sure enough, as I arrived at the site, I

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Photo 3A: While these red oaks appeared to have suddenly died, possibly from Oak Wilt, the real culprit was an herbicide containing Imazapyr, applied to the driveway the year before. Although red oaks are highly sensitive, white oaks (background, center) didn't appear to be affected at all.

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witnessed two dead red oaks, one on either side of the drive, just as the arborist described. On trees more distant from the drive, I spied the typical damage caused by Imazapyr herbicide (Photo 3B). Apparently a landscape company had applied an herbicide to the driveway for long-term weed control the previous year. There's only one thing as deadly as Oak Wilt on red oaks . . . Imazapyr.

SUSAN'S LOVELY HEDGE

Susan, who lives near Rochester Hills, had a lovely hedge that ran the entire length of her back property line (Photo 4A). She called Bill, her landscape and lawn guy, to find out why the hedge seemed to be dying. Bill wasn't quite certain of the cause. So, he called me. Such decline symptoms could be caused by a variety of factors . . . such as winter injury, root rot, stem canker diseases, etc. When I walked up and could see the symptoms on the hedge close-up, I knew immediately that the culprit was Imazapyr (Photo 4B). I asked Susan if someone had applied any herbicides on the rock mulch for weed control the year before. She replied that she had. I asked to see the herbicides she had applied (Photo 4C). When I told her what the problem was, she begin to cry. I tried to soothe her by saying that the damage was from last year's application . . . that because the stem's cambium tissue was still green, many of them might recover with time. Then, she began to cry even more emotionally. I asked her what was wrong. She said she had just made another application.

Photo 3B: The telltale sign of Imazapyr damage is stunted, chlorotic foliage trying to "push growth". These symptoms may not always be present if the trees or shrubs are severely affected.

Photo 4A: Susan's previously magnificent hedge appeared to be dying after application of Roundup Extended Control and Roundup 365. Because she had applied another treatment slightly before my visit, we can expect the hedge to decline further next year.

Photo 4B: Note the telltale symptoms of stunted, bushy appearance of Imazapyr effects on the hedge, while (typically) other portions of the hedge appear unaffected . . . also indicating uneven application and uneven uptake by the plant.

Photo 4C: Susan's arsenal for weed control was fairly substantial.

Photo 5A: These declining maple trees straddling the walkway in Petoskey's Bay Front Park are gradually being replaced with ornamental pear trees. Perhaps the city doesn't know why the maples have declined? Some of the trees not yet dead exhibited signs of Imazapyr uptake.

Photo 5B: A clue for the culprit of the maple decline can be seen in this photo – small maple seedlings have been treated with an herbicide. It is not uncommon for tree grate areas and surrounding pavers to be treated with herbicides for weed suppression.

Photo 5C: Another clue that something is wrong in the paver area is that the maples in the lawn area appeared perfect. Normally, we'd expect to see some herbicide effects on trees from lawn herbicides.

PETOSKEY'S BAY FRONT PARK

"Sittin' on the Dock of the Bay, watching the tide roll away." Well, not quite. Earlier this year, I taught a three-hour workshop on Oak Wilt and other tree maladies for arborists and landscapers in the Petoskey area. The lecture portion was followed by a landscape tour of downtown Petoskey. At Bay Front Park, many of the maple trees straddling the paver path from downtown to the bay were declining (Photo 5A). Many of the attendees thought the symptoms appeared similar to Verticillium Wilt. As we continued to discuss the matter, I noted dead tree seedlings in the grates beneath the maple trees (Photo 5B) . . . and subsequently the telltale signs of stunted yellow, foliage on the branches that still exhibited some life. That's right, Imazapyr. Note that the trees in the lawn areas were perfectly healthy (Photo 5C).

MULCH MADNESS

An arborist asked me to visit Dan's property near Belleville, MI. Dan's trees and shrubs exhibited severe damage typical of herbicide injury (Photo 6A). Dan was certain that the problem stemmed from the application of bagged mulch (Photo 6B), which already contained pre-emergence herbicides and which he had put around every tree and shrub on his property. As we discussed how to test for herbicides in his left-over two bags of mulch in his pole barn, I looked over near his workbench and spied some herbicide containers (Photo 6C). I asked Dan where the Ortho Ground Clear was used. He replied that his nephew had applied it to the driveway (Photo 6D). I asked if his nephew could also have applied it to the mulch rings around his trees and shrubs. Dan replied that he didn't think so but that he didn't know for certain. Yep, testing is underway . . .

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Photo 6A: Dan noticed severe damage to his trees and shrubs after he had applied mulch from bags, which already contained pre-emergent herbicides.

Photo 6B: Dan had two bags of the mulch left over and we discussed how to test it for other herbicides.

Photo 6C: Subsequently, I spied several jugs of herbicides near his work bench in his pole barn. Dan claimed his nephew had applied the Ortho Ground Clear to the driveway but didn't think the herbicide was applied to mulch rings around trees and shrubs.

Photo 6D: Note the damage to the lawn from the water-transported movement of Imazapyr herbicide away from its target of application (driveway).

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DEAD TREES ALONG THE RIVER

A retired couple decided to "spruce up" their back yard, which is along the banks of the Clinton River. So, they hired a landscape company to apply mulch, which was also treated after distribution with an herbicide. The following year, many of the trees in the couple's back yard and on the banks of the river did not leaf-out (Photo 7). I was called in and immediately determined that Imazapyr was the culprit. With advice to wait and see, most of the trees did not recover after two years. The landscape company's insurance is paying for all damages.

LOGGERS GET READY

Ellen, who lives in the Gull Lake area not far from the MSU Kellogg Biological Station, applied an herbicide to her patio and brick walkway near her home. A year later, several of her large trees, especially the walnuts, did not leaf-out . . . or leafed-out very sparsely (Photo 8). An arborist correctly diagnosed the problem after learning about Imazapyr while attending one of my lectures (Yea!!!). In case her trees do not recover, Ellen has already obtained bids for the value of the walnut trees whose trunks approach 2 ½-3 feet dbh and are straight as an arrow without any limbs for 20-25 feet or so.

CONCLUSIONS

There are several important things to know about Imazapyr and herbicide products containing Imazapyr. Imazapyr damage typically appears the year after application. Labels are conspicuously vague about precautions, especially for the homeowner market (Photo 9). Imazapyr lasts at least a year and tends to move from its application target in water, either laterally or downward into root zones of trees. About half of the Imazapyr damage I see is due to professional applicators. Imazapyr symptoms are fairly diagnostic (Photos 2. 3B, 4B & 6A). Some trees are more sensitive than others; for example, red oaks and walnuts are highly sensitive while white oaks and maples tend to be less sensitive. As I always say during my lectures and workshops for professionals, "if you haven't seen Imazapyr damage yet, you've missed it." L

Please feel free to contact me with any suspected, interesting cases of herbicide damage to trees, shrubs and landscapes at robertsd@msu.edu.

The author, MSU and MGIA do not endorse any particular products. If using pesticides, be sure to read and follow label directions.

Photo 7: A couple who lived along the Clinton River decided to hire a landscape company to apply mulch to their back yard. The company subsequently treated the mulch with a herbicide . . . you guessed it, Imazapyr . . . for long-term weed control. Although many red oaks died, the oak in the center is still hanging on three years after the application.

Photo 8: Ellen applied Roundup 365 to her patio and brick walk (lower right in photo). The next year, some of her walnuts were severely affected. Loggers are standing by hoping to be able to harvest the trees. Roundup 365 contains 0.08% Imazapic. It's hard to believe that such a low concentration applied to such a small area (the walk) would do so much damage to a large tree.

Photo 9: Most of the Imazapyr-containing products do a great job of marketing, regarding where to apply the herbicide and how long you can expect weed control. To find the precautions about application over or in the vicinity of tree roots is rather inconspicuous or lost in the fine print, which many people do not bother to read.